

AMENDMENTS TO THE CLAIMS:

No claim amendments are being made at this time. This listing is provided for the convenience of the Examiner. This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original) A traffic monitoring system comprising:

a video processor that is configured to receive an image from a camera having a field of view that includes a roadway, and

a pattern recognizer that is configured to identify headlight patterns in a recognition zone within the image, and to thereby distinguish vehicles within the recognition zone;

wherein

the vehicles include headlights that are characterized as producing

a broad segment of projected light and

a narrower segment of higher intensity light;

the recognition zone corresponds to a segment of a field of view of the camera wherein

reflected light received from reflection areas that are illuminated by the narrower segments of higher intensity light is substantially diminished and

the projected light from the headlights is received directly; and

the headlight patterns correspond to the projected light from the headlights.

2. (Original) The traffic monitoring system of claim 1, further comprising:

a zone extractor that is configured to extract a sub-image from the image corresponding to the recognition zone.

3. (Original) The traffic monitoring system of claim 1, further comprising a memory for storing prior images from the camera, and wherein the pattern recognizer is further configured to track a path of each of the vehicles based on corresponding headlight patterns in the prior images.

4. (Original) The traffic monitoring system of claim 1, wherein the pattern recognizer is further configured to increment a count for each identified new headlight pattern, corresponding to a newly distinguished vehicle.

5. (Original) The traffic monitoring system of claim 1, wherein the segment of the field of view of the camera:
does not include reflection area when the camera is within a predominant path of the reflected light from the reflection area, and
includes the reflection area when the camera is not within the predominant path of the reflected light from the reflection area.

6. (Original) The traffic monitoring system of claim 1, further including a traffic analyzer that is configured to provide traffic analysis information based on information received from the pattern recognizer regarding distinguished vehicles.

7. (Original) The traffic monitoring system of claim 1, wherein the pattern recognizer is further configured to:
identify light patterns within the image, and

identify combinations of light patterns within the image that are consistent with characteristics of vehicle headlights, including at least one of:

a distance between the light patterns, and

a pairing of light patterns based on a consistent track of each of a pair of light patterns.

8.-11. (Cancelled)

12. (Original) A method of detecting a vehicle, comprising:

receiving an image from a camera having a field of view that includes a roadway,

identifying one or more headlight patterns within a recognition zone of the image, and

detecting the vehicle based on the one or more headlight patterns;

wherein

the vehicle includes headlights that are characterized as producing

a broad segment of projected light and

a narrower segment of higher intensity light; and

the recognition zone corresponds to a segment of the field of view of the camera wherein

reflected light received from a reflection area of the roadway that is illuminated

by the narrower segment of higher intensity light is substantially diminished, and

the projected light is received directly.

13. (Original) The method of claim 12, wherein

detecting the vehicle includes identifying a newly occurring headlight pattern in the one or more headlight patterns.

14. (Original) The method of claim 12, wherein
the segment of the field of view of the camera:

does not include the reflection area when the camera is within a predominant path
of the reflected light from the reflection area, and

includes the reflection area when the camera is not within the predominant path of
the reflected light from the reflection area.

15. (Original) The method of claim 12, further including
determining a path of the vehicle based on prior images from the camera.

16. (Original) The method of claim 12, further including
incrementing a count when the vehicle is detected.

17. (Original) The method of claim 12, further including
detecting other vehicles based on the one or more headlight patterns, and providing one
or more traffic analysis reports based on the detected vehicles.

18.-21. (Cancelled)

22. (Previously Presented) A computer program embodied on a computer readable
medium for execution on a processing device that causes the processing device to:
identify illumination patterns in a series of images from a video camera, and
distinguish vehicles from reflections based on tracks of the illumination patterns in the
series of images.

23. (Original) The computer program of claim 22, wherein

the vehicles are distinguished from the reflections based on a length of each track.

24. (Original) The computer program of claim 22, wherein

the vehicles are distinguished from the reflections by identifying patterns within an identification region that is beyond an extent of the tracks of the illumination patterns of the reflections in a field of view of the video camera.

25. (Previously Presented) The traffic monitoring system of claim 1, including:

a tracking system that is configured to identify tracks of illumination patterns within a sequence of images from the video processor, and

a reflection detector that is configured to distinguish illumination patterns that correspond to reflections, based on the tracks of the illumination patterns.

26. (Previously Presented) The traffic monitoring system of claim 25, wherein

the tracks of the illumination patterns that correspond to reflections are substantially shorter than the tracks of illumination patterns that correspond to vehicle headlights.

27. (Previously Presented) The traffic monitoring system of claim 25, wherein

the tracks of the illumination patterns that correspond to reflections end substantially before the recognition zone.

28. (Previously Presented) The traffic monitoring system of claim 25, wherein

the tracking system includes

a threshold detector that identifies the illumination patterns as patterns in each image of the sequence of images that exceed a threshold luminance level.

29. (Previously Presented) The method of claim 12, including:

maintaining one or more tracks corresponding to a series of consistent illumination patterns from a series of images from the camera, and

distinguishing an illumination pattern corresponding to the vehicle from an other illumination pattern corresponding to reflected light received from the reflection area of the roadway that is illuminated by the narrower segment of higher intensity light based on a length of the track of the other illumination pattern.

30. (Previously Presented) The method of claim 29, wherein maintaining the one or more tracks includes:

identifying an illumination pattern in a current image from the video camera corresponding to headlights of the vehicle, and

identifying a similar illumination pattern in a prior image from the video camera.

31. (Previously Presented) The method of claim 29, wherein

the track of the other illumination pattern that corresponds to the reflection ends substantially before the recognition zone.

32. (Previously Presented) The method of claim 29, including identifying the illumination pattern and the other illumination pattern as patterns in each image of the sequence of images that exceed a threshold luminance level.

33. (Previously Presented) A traffic monitoring system comprising:

a video processor that is configured to receive a sequence of images from a camera having a field of view that includes a roadway,

a tracking system that is configured to identify tracks of illumination patterns within the sequence of images, and

a reflection detector that is configured to distinguish illumination patterns that correspond to reflections, based on the tracks of the illumination patterns.

34. (Previously Presented) The traffic monitoring system of claim 33, wherein the tracks of the illumination patterns that correspond to reflections are substantially shorter than the tracks of illumination patterns that correspond to vehicle headlights.

35. (Previously Presented) The traffic monitoring system of claim 33, wherein the tracks of the illumination patterns that correspond to reflections end substantially before an edge of the field of view of the camera.

36. (Previously Presented) The traffic monitoring system of claim 33, wherein the tracking system includes a threshold detector that identifies the illumination patterns as patterns in each image of the sequence of images that exceed a threshold luminance level.

37. (Previously Presented) A method of detecting vehicles, comprising:
maintaining one or more tracks corresponding to a series of consistent illumination patterns from a series of images from a video camera, and
distinguishing each illumination pattern corresponding to each vehicle from each illumination pattern corresponding to each reflection from each vehicle based on a length of each of the one or more tracks.

38. (Previously Presented) The method of claim 37, wherein maintaining the one or more tracks includes:

identifying an illumination pattern in a current image from the video camera corresponding to vehicle headlights, and

identifying a similar illumination pattern in a prior image from the video camera..

39. (Previously Presented) The method of claim 37, wherein the tracks of the illumination patterns that correspond to reflections end substantially before an edge of the field of view of the camera.

40. (Previously Presented) The method of claim 37, further including identifying the illumination patterns as patterns in each image of the sequence of images that exceed a threshold luminance level.